# NATO Code of Best Practice (COBP) for C2 Assessment

## Human and Organizational Factors

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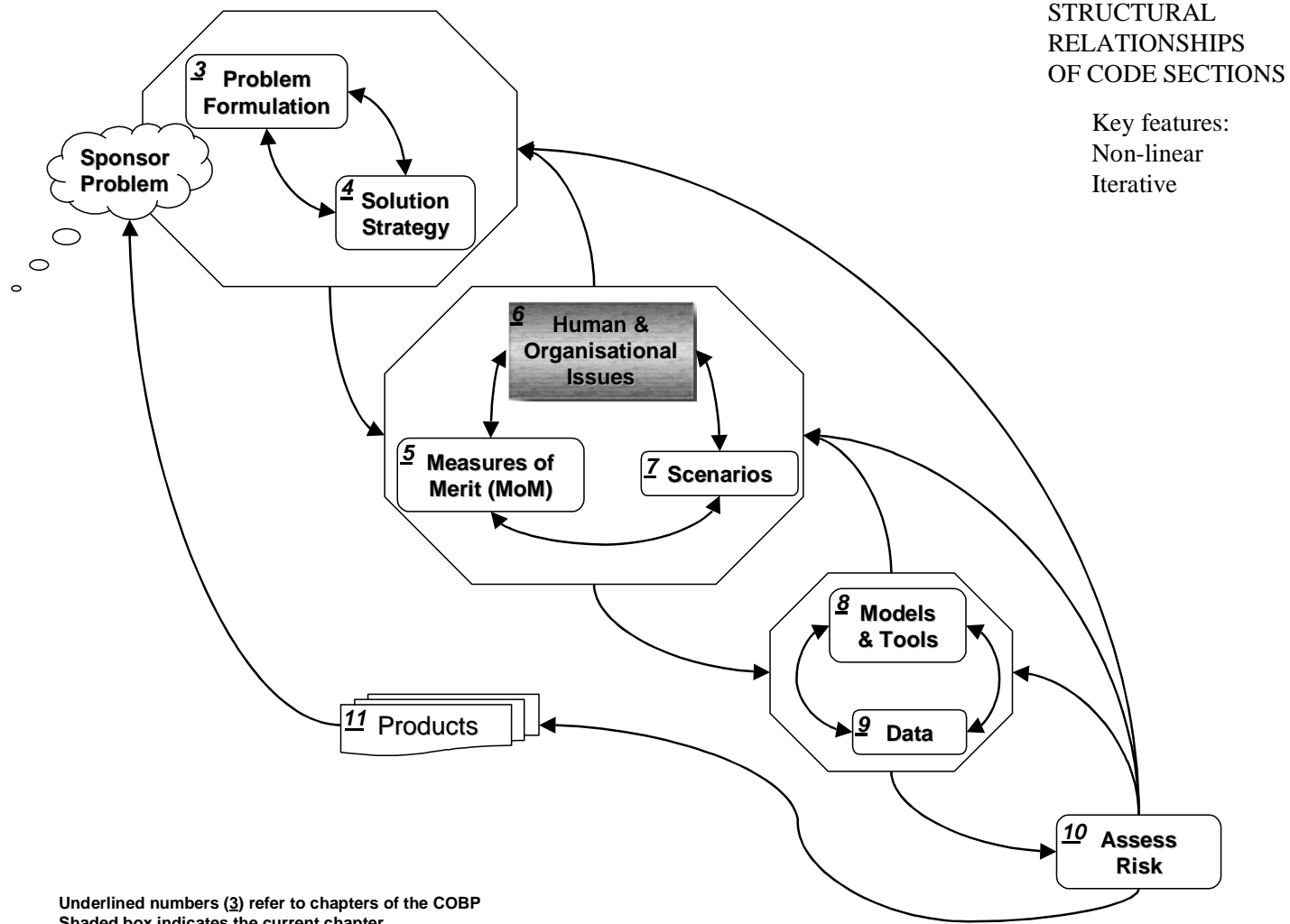| | | | Form Approved OMB No. 0704-0188 |
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# Human and Organizational Factors

- C2 is distinguished by the human dimension;
- Maximizing the likelihood of mission accomplishment demands a C2 system characterized by efficient interaction between humans, organization, and technology;
- Human and organizational issues are central to structuring C2 problems and therefore need to be considered from the very beginning of a study in an iterative manner.

# Human and Organisational Factors

SAS-039
R&T
ORGANIZATION

STRUCTURAL
RELATIONSHIPS
OF CODE SECTIONS

Key features:
Non-linear
Iterative

Sponsor Problem

3 Problem Formulation

4 Solution Strategy

6 Human & Organisational Issues

5 Measures of Merit (MoM)

7 Scenarios

8 Models & Tools

9 Data

11 Products

10 Assess Risk

Underlined numbers (3) refer to chapters of the COBP
Shaded box indicates the current chapter

**PR6-3**

# Key Considerations

- Addressing human and organisational issues adds complexity

- Relevance of human and organisational factors for the C2 assessment problem

- Availability of empirical evidence and human science expertise

- Parametric treatment of factors versus explicit modelling of human behaviour

# Human Factor Categories

- Human behaviour
- Decision making behaviour
- Command style

# Human Behaviour

- Human performance factors
  - psycho-physiological (stress, fatigue,hunger)
  - ergonomic/external factors limiting performance
- Social interactions among individuals and groups
  - psychological processes
  - background (cultural, educational, religious)
  - social and work competence and experience

# Decision Making Behaviour

- ## Type of decision
  - simple (automatable: decision rules or algorithms)
  - contingent (accounting for value added by information about operational environment )
  - complex (involving fundamental changes when no doctrinal guidance exists)

- ## Cognitive factors (complexity of issues, perception of environment)

- ## Capacity of commanders and other decision makers (training and experience)

# Command Style

- **Attributes of commander**
  - background (training, operational experience)
  - leadership (motivational capability, moral integrity)
  - risk attitude

- **Organisational style**
  - decomposition, hierarchic
  - holistic, centralised,

- **Command philosophy**
  - mission-oriented versus order-oriented
  - analytic versus holistic

# Human Behaviour and OOTW

- **Human behaviour is more critical**
  - tactical-level of decisions may have strategic consequences (media presence)

- **Multitude of parties and groups**
  - (para)military, political/ethnical/religious groups, amorphous groupings, aid organisations (IO,NGO)
  - diverging interests, different behavioural patterns

- **Perceptions of military actions more important than their physical effects**

# Organisational Factors

- Structure of organisation
- Functional responsibility
- Operational capacity

# Structure of Organisation

- **Number of command echelons**
- **Span of control for command nodes**
- **Linkage of nodes**
  - hierarchical, spokes of a wheel, multi-connected, networked
  - permanent versus transitory relationships
  - formal versus informal relationships

# Functional Responsibility

- **Distribution of responsibility**
  - location of functional activities (e.g.,intelligence, logistics, CIMIC)
  - distribution of authority
  - functional specificity (warfare domain task forces for combined operations) versus integrated capabilities (mission tailored task forces for joint operations)
- **Degree of ambiguity in command relationships**

# Operational Capacity

- Personnel (background, training, experience)
- Communication systems and architectures
- Information processing systems and architectures
- Operational field experience

# C2 Analysis Problem in OOTW

- C2 in OOTW: complex interactions of tightly coupled human, organisational, and technological factors and processes;

- Analyst is faced with a (theoretically) large set of complex options;

- Analysis problem: management of complexity to arrive at efficient options;

- Approach: Integrated Analysis

# Integrated Analysis

- Integrated Analysis implies iterative testing of hypotheses on related sets of key parameters
  - starting with few aggregated parameters that cover the theoretically possible range of options;
  - narrowing, in each iteration, the bounds for subsequent testing of related sets of ever more disaggregated parameters;
- Hypotheses must include decision strategy options in the operational context of analysis.

# Decision-making Drivers
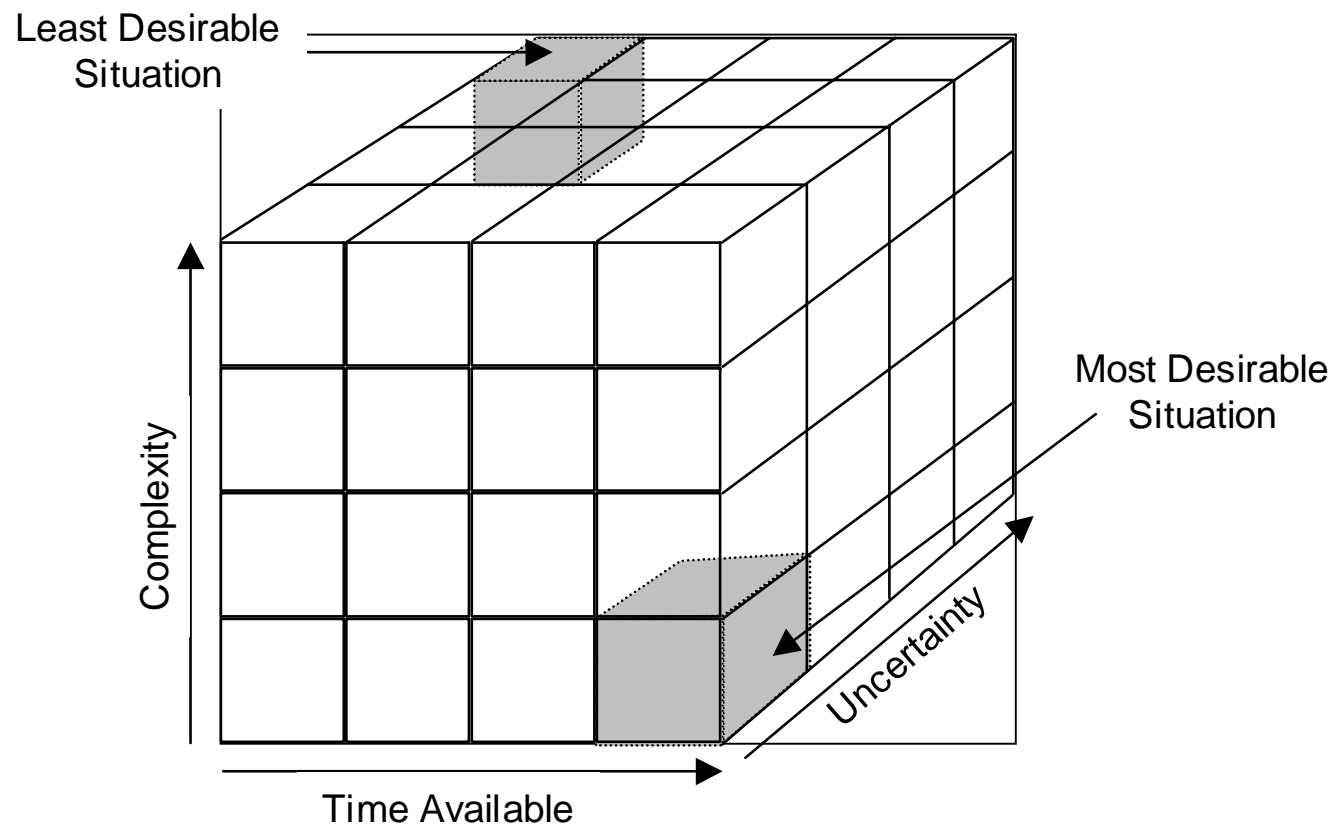
# Operational Decision Strategy

- Objective: staying ahead of situational change (pro-active decisions);

- Dilemma: shortening C2 loop (OODA) means greater situational uncertainty (risk of counter-productive decisions);

- Decision strategy: buying sufficient time for OODA through short-term (delaying) actions;

- Sufficiency criterion: maximise probability of mission success.

# Human Issues in the Assessment

- Addressing human and organisational issues requires interdisciplinary analysis involving different scientific cultures;

- Project leader must be aware of the current state of the disciplines involved;

- Good personal and working relationship with customer of analysis are essential;

- Early working relationships with subjects of, or affected by, assessment are important.

# Human and Organisational Issues

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